Design Criteria

Design Criteria	Design Condition
Flow (MGD)	
Design Capacity	6.5
Peak Day	16.25
CBOD Loading	
Annual Average	
Load (lb/day)	11,900
Concentration (mg/L)	220
Suspended Solids Loading	
Annual Average	
Load (lb/day)	14,900
Concentration (mg/L)	275
Ammonia Loading	
Annual Average	
Load (lb/day)	330
Concentration (mg/L)	6.0
Effluent Quality	
$CBOD_5$ (mg/L)	
June-November	10
December-May	15
TSS (mg/L)	15
NH_3-N (mg/L)	
June-November	1.8
December-May	8.0

Headworks Building

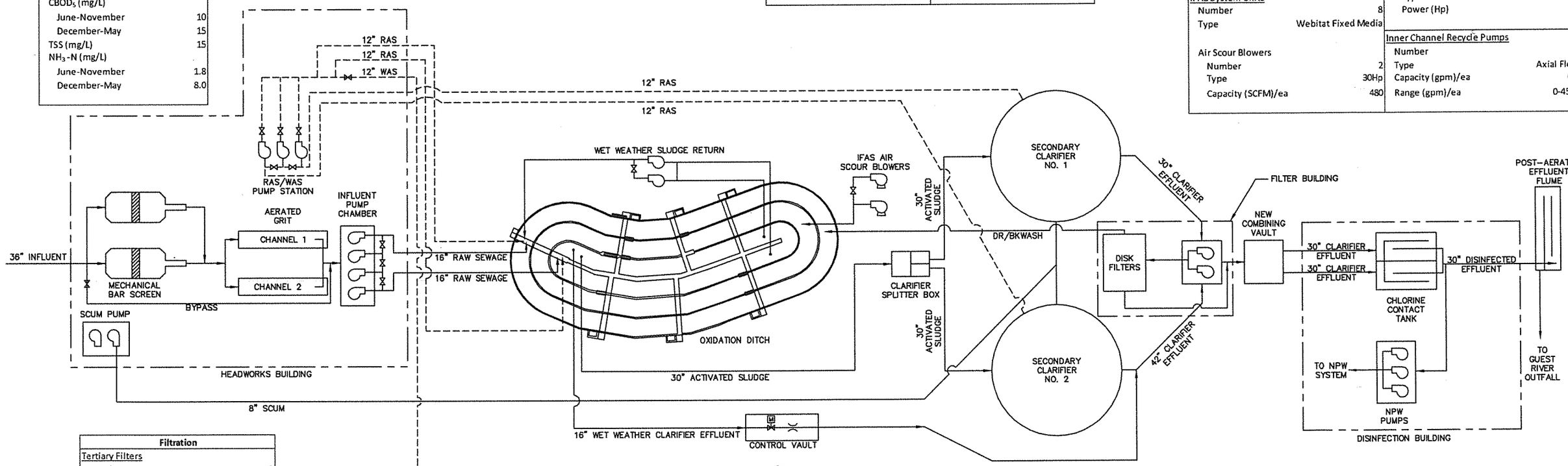
Mechanical Filter Screen	
Number	2
Width (ft)	8.12
Capacity (MGD)	8.12
Horizontal Screen Opening (mm)	6
Vertical Screen Opening (mm)	6
Grit Removal Unit	
Number	2
Type	Aerated
Air Blowers	
Number	1
Type	Positive Displacement
Capacity (SCFM)/ea	250
Influent Pumps	
Number	4
Type	Submersible
Capacity (gpm)/ea	3,760
RAS/WAS Pumps	
Maximum Design Flow	6.5 MGD
Minimum Design Flow	1.5 MGD
Number	3
Type	T10A-B-4
Capacity (gpm)/ea	2,260
Range (gpm)/ea	1,040-2,260
Range (rpm)/ea	480-930

Clarifiers

Secondary Clarifiers	
Number	2
Type	RimFlo, Circular
Diameter (ft)	80
SWD (ft)	12
Volume (gal)/ea	451,000
Surface Area (sf)/ea	5,000
Weir Length (ft)/ea	223
Clarifier Flow (MGD)/ea	
Design Capacity	6.50
Surface Overflow (gal/day/sf)	
Design Capacity	1,300
Solids Loading Rate (lb/day/sf)	
Design Capacity	3
Weir Loading Rate (gal/day/ft)	
Design Capacity	29,100
Peak Flow Clarifier	
Number	1
Type	Oxidation Ditch Inner Channel
SWD (ft)	12
Volume (gal)	450,000
Surface Area (sf)	8,800
Weir Length (ft)	12
Clarifier Flow (MGD)/ea	
Peak Day	3.25
Surface Overflow (gal/day/sf)	
Peak Day	370
Solids Loading Rate (lb/day/sf)	
Peak Day	1.7
Weir Loading Rate (gal/day/ft)	
Peak Day	270,800

Oxidation Ditch

Channel Characteristics	
Number of Channels	3
Dimensions	
Width (ft)/ea	18
Depth (ft)/ea	12
Volume (gal)	
Inner	809,000
Middle	1,006,000
Outer	1,203,000
Hydraulic Retention Time (hr)	
Annual Average Flow	
Inner	3
Middle	3.7
Outer	4.4
Wet Weather Flow	
Inner	1.2
Middle	1.5
Outer	1.8
IFAS System Units	
Number	8
Type	Webitat Fixed Media
Air Scour Blowers	
Number	2
Type	30Hp
Capacity (SCFM)/ea	480
Organic Loading (lb BOD/1000cf)	
Design Capacity	5.5
MLVSS (mg/L)	
Design Capacity	2,000
Solids Inventory (lb)	
Design Capacity	50,000
F/M (lb BOD/lb Solids)	
Design Capacity	0.11
Aerators	
Outer & Middle Channel	
Number	6
Type	Surface Aerators
Power (Hp)	50
Inner Channel	
Number	6
Type	Surface Aerators
Power (Hp)	25
Inner Channel Recycle Pumps	
Number	2
Type	Axial Flow
Capacity (gpm)/ea	6.5
Range (gpm)/ea	0-4520

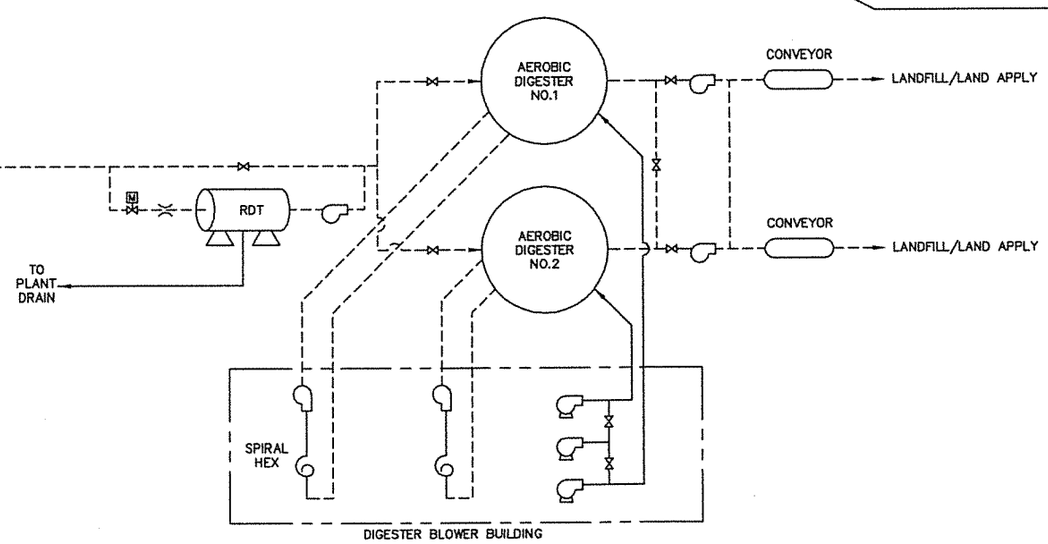


Filtration

Tertiary Filters	
Number	2
Type	Disk Filters
Capacity (MGD)/ea	6
Hydraulic Loading Rate (gpm/sf)/ea	6.45
Solids Loading Rate (lbs TSS /day/sf)/ea	1.55

Disinfection

Chlorine Contact Tank	
Number	2
Design Baffling Factor	0.7
Capacity (MGD)/ea	8.12
Volume (gal)	70,000
Hydraulic Retention Time (min)	
Design Capacity	16
Peak Day	6
Maximum Cl_2 Dose (mg/L)	8.0
Minimum CT (mg·min/L)	####
SO_2 Dose (mg/L)	####



Post Aeration

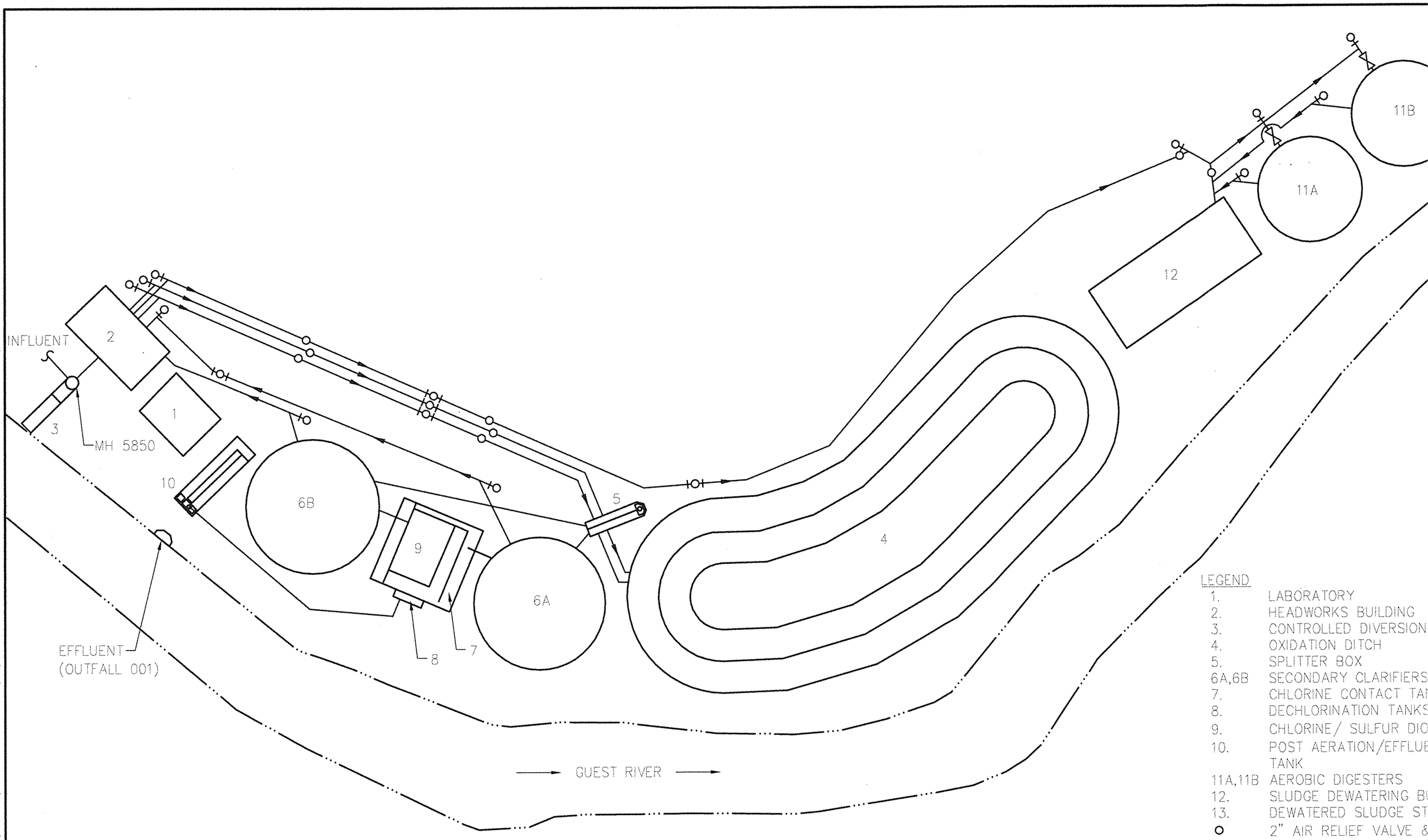
Post Aeration Effluent Flume	
Number of Channels	2
Type	Diffused Air
Capacity (MGD)	16.25
Air Blowers	
Number	1
Type	Positive Displacement
Capacity (SCFM)/ea	250
Parshall Flume	
Number	1
Size (in)	24

LEGEND

- LIQUID STREAM
- SOLIDS STREAM
- BUILDING BOUNDARY
- PUMP
- BLOWER
- VALVE
- CONTROL VALVE
- FLOW METER

PRELIMINARY

NOT FOR CONSTRUCTION



LEGEND

1.	LABORATORY
2.	HEADWORKS BUILDING
3.	CONTROLLED DIVERSION
4.	OXIDATION DITCH
5.	SPLITTER BOX
6A,6B	SECONDARY CLARIFIERS
7.	CHLORINE CONTACT TA
8.	DECHLORINATION TANKS
9.	CHLORINE/ SULFUR DIO
10.	POST AERATION/EFFLUE TANK
11A,11B	AEROBIC DIGESTERS
12.	SLUDGE DEWATERING B
13.	DEWATERED SLUDGE ST
○	2" AIR RELIEF VALVE &
	CLEANOUT
	GATE VALVE
■	WASHDOWN HYDRANT

Drawing Copyright © 2011

CHA
1116 South Main Street · Blacksburg, VA 24060-5548
Main: (540) 552-5548 · www.chacompanies.com

COEBURN–NORTON–WISE WASTEWATER TREATMENT PLANT

SLUDGE PIPING

File: V:\PROJECTS\BVA\21510\CADD\FIGURES\FIGURE3.DWG Saved: 9/27/2011 12:00:09 PM Plotted: 10/4/2011 12:19:06 PM User: Hodge, Chris LastSavedBy: 3771